
PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project

Enhance Fish Habitat By Improving Water Quality

BPA project number: 20003

Contract renewal date (mm/yyyy): ☐ Multiple actions?

Business name of agency, institution or organization requesting funding

South Yakima Conservation District

Business acronym (if appropriate) SYCD

Proposal contact person or principal investigator:

Name	Judith A. Vesper
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NPPC Program Measure Number(s) which this project addresses

FWS/NMFS Biological Opinion Number(s) which this project addresses

Other planning document references

Supporting Agencies: Yakima Indian Nation, Kittitas-Yakima Resource Conservation and Development (RC&D), Inter-Agency Council, TriCounty Water Resource Agency, Sunnyside Valley Irrigation District (SVID)

Documentation: Washington Department of Ecology TMDL Report for the Yakima River, Needs Assessment for the Upper/Lower Yakima Water Quality Management Area, Surface-water Quality Assessment of the Yakima River Basin, Yakima River Basin Water Quality Plan, Yakima Valley Conference of Governments, Watershed Approach to Water Quality Management, Needs Assessment for the Upper/Lower Yakima Watershed, Environment Impact Statement (EIS)-Yakima Fisheries Project, Anadromous Fish Restoration Plan, Granger Drain Monitoring Project Report, Sulphur Creek Characterization Project, South Yakima Model Implementation Project (MIP)

Short description

Eliminate sediment/nutrient loading of the Yakima River due to agricultural and dairy runoff and poor irrigation water management. Provide landowners within the watershed technical assistance and cost-share to achieve Best Management Practices.

Target species

Spring & Fall Chinook, Coho Salmon & Summer Steelhead

Section 2. Sorting and evaluation

Subbasin

Lower Mid-Columbia Subregion, Yakima Subbasin

Evaluation Process Sort

CBFWA caucus	Special evaluation process	ISRP project type
Mark one or more caucus	If your project fits either of these processes, mark one or both	Mark one or more categories
<input checked="" type="checkbox"/> Anadromous fish <input checked="" type="checkbox"/> Resident fish <input type="checkbox"/> Wildlife	<input type="checkbox"/> Multi-year (milestone-based evaluation) <input checked="" type="checkbox"/> Watershed project evaluation	<input checked="" type="checkbox"/> Watershed councils/model watersheds <input type="checkbox"/> Information dissemination <input type="checkbox"/> Operation & maintenance <input type="checkbox"/> New construction <input type="checkbox"/> Research & monitoring <input checked="" type="checkbox"/> Implementation & management <input type="checkbox"/> Wildlife habitat acquisitions

Section 3. Relationships to other Bonneville projects

Umbrella / sub-proposal relationships. List umbrella project first.

Project #	Project title/description

Other dependent or critically-related projects

Project #	Project title/description	Nature of relationship

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?
1992	Granger Drain Monitoring Project	reduced TMDL and F.coliform
	Dairy Waste Cost-Share Program	reduces nutrient runoff into waterways
1998	Gray's Landing Poplar Project	scrubs chemicals from groundwater
1995	Sulphur Creek Characterization Project	identified areas for major cleanup

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	acquire and prioritize projects	a	advertise to landowners by mail and telephone

		b	have 1 month window for initial signup
		c	calculate water savings
		d	selection based on amount of soil removed from tailwater
2	implement project	a	coordinate with NRCS to provide technical assistance in planning and construction
		b	approve engineering plans
		c	inspect completed project according to NRCS specifications
3	provide cost-share assistance	a	provide 50% of total cost, up to a specified limit
		b	project must pass NRCS inspection before funds are released
4	maintain projects	a	projects must be maintained for a MINIMUM of 10 years
5	evaluate and report impact of the activities on water quality	a	use visual media such as videos, photos and slides to demonstrate before and after conditions
		b	use already existing water quality monitoring program to measure cleanup success
		c	submit quarterly and final reports to Bonneville Power Administration

Objective schedules and costs

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
1	10/1999	12/1999			0.12%
2					0.00%
3					99.50%
4					0.00%
5					0.38%
				Total	100.00%

Schedule constraints

Inclement weather, construction problems, timing of funds

Completion date

2002

Section 5. Budget

FY99 project budget (BPA obligated):

FY2000 budget by line item

Item	Note	% of total	FY2000
Personnel		%0	0

Fringe benefits		%0	0
Supplies, materials, non-expendable property	Solicitation of landowners and completing quarterly & final reports	%1	1,000
Operations & maintenance		%0	0
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		%0	0
NEPA costs		%0	0
Construction-related support		%0	0
PIT tags	# of tags:	%0	0
Travel		%0	0
Indirect costs		%0	0
Subcontractor		%0	0
Other	Cost-share to landowners	%100	199,000
TOTAL BPA FY2000 BUDGET REQUEST			\$200,000

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount (\$)
SYCD	project management	%9	40,000
NRCS	technical assistance	%5	25,000
landowners	materials and labor	%43	199,000
		%0	
		%0	
Total project cost (including BPA portion)			\$464,000

Outyear costs

	FY2001	FY02	FY03	FY04
Total budget	\$100,000	\$50,000		

Section 6. References

Watershed?	Reference
<input checked="" type="checkbox"/>	Washington Department of Ecology. 1997. A Suspended Sediment and DDT Total Maximum Daily Load Report for the Yakima River. WDOE. Olympia, Washington.
<input checked="" type="checkbox"/>	Washington Department of Fish and Wildlife. 1997. Final Joint WDFW/Tribal Wild Salmonid Policy. WDFW. Olympia, Washington.
<input checked="" type="checkbox"/>	Washington Department of Ecology. 1996. Section 303(d) List of Impaired Water Bodies. WDOE. Olympia, Washington.
<input checked="" type="checkbox"/>	South Yakima Conservation District. 1995. Sulphur Creek Characterization Report. SYCD. Sunnyside, Washington.
<input checked="" type="checkbox"/>	South Yakima Conservation District. 1992. Granger Drain Monitoring Project. SYCD. Sunnyside, Washington.
<input checked="" type="checkbox"/>	South Yakima Conservation District. 1982. South Yakima Model Implementation Project (MIP) Final Report. SYCD. Sunnyside, Washington.
<input checked="" type="checkbox"/>	USDA Soil Conservation Service. 1977. Renewable Natural Resource Program. USDA. Washington, DC.
<input type="checkbox"/>	

PART II - NARRATIVE

Section 7. Abstract

Sediment and pollutants are detrimental to salmonids and resident fish. Silt smothers egg nests and small food organisms, while suspended sediment abrades gill membranes and impairs vision. South Yakima Conservation District (SYCD) has targeted three watersheds that are contributors to poor water quality in the Yakima River.

Our goal is to improve fish habitat and water quality in the main stem and tributaries of the Lower Yakima River by reducing nutrient and sediment loading from agricultural runoff. Irrigation drains carry significant quantities of soil, nutrients and several agricultural chemicals to rivers and streams, resulting in poor fish habitat. This grant will help subsidize the removal of harmful sediments/nutrients from irrigation return flows before they enter the river.

Permanent reduction in pollutants improves fish and wildlife habitat as well as the aesthetic quality of rivers and streams. SYCD believes that cost-sharing Best Management Practices (BMPs) is the most effective method of getting conservation practices on the ground. Priority BMPs such as conversion of surface irrigation to drip/sprinkler systems and dairy waste storage structures substantially reduce water quality problems, by reducing soil erosion and nutrient loading to the river.

Quality control is accomplished by following Natural Resources Conservation Service (NRCS) specifications, and conducting inspections with local NRCS staff. Upcoming Total Maximum Daily Load (TMDL) limits will also encourage landowners to upgrade to more efficient practices. We expect to lower our turbidity levels and *Fecal coliform* from agricultural sources.

Evaluation of project impacts will be aided by visual media such as videos, photos or slides, along with technical field experience and observations.

Section 8. Project description

a. Technical and/or scientific background

Poor water quality is a major concern in the Yakima River Basin, the watershed within the South Yakima Conservation District. Many pollutants flowing into the Yakima River are attributed to irrigated farming practices, dairy operations, and inadequate management of these practices. The district's primary concern is to assist landowners in applying conservation Best Management Practices (BMPs) to the land to maintain the soil and water resources. According to the South Yakima Model Implementation Project (MIP), "The principle source of pollution resulting from farming practices was identified as suspended sediment in surface runoff."¹ This is in accordance with the USDA Soil Conservation Service *Renewable Natural Resource Program*.⁴

Suspended sediment and persistent pesticide loads from irrigated agricultural areas of the Lower Yakima River Basin have long been recognized as serious impairments to water quality and fish habitat. Under the requirements of Section 303(d) of the Federal Clean Water Act and Chapter 90.48 of the Revised Code of Washington (RCW), the Department of Ecology conducted a Total Maximum Daily Load (TMDL) evaluation in a portion of the Lower Yakima River Basin.

The primary goal of this proposal is to reduce the sediment, DDT, phosphorous, biological and nutrient loading from approximately 400 acres of agricultural lands within the listed 3 sub-basins (Granger Drain, Sulphur Creek and Mud Lake Drain) from entering into the Yakima River. This will be accomplished by assisting landowners with the implementation of agricultural BMPs such as converting rill irrigation to sprinkler or drip, PAM on all row crops, and structural and management practices on dairies to

improve the soil and water resources and improve water quality and fish habitat. An average savings of 40-60 tons of soil per acre per year is to be expected, with an average savings of 30-50 acre inches of water per year.

Concentrations of t-DDT in whole fish from the Lower Yakima River at Kiona were in the 1100 to 3000 ug/kg range, which exceeds the 1000 ug/kg maximum concentration recommended by NAS to prevent eggshell thinning effects on fish eating and raptorial birds. (Ecology 1986, VIII)

The Yakima River has been designated by the National Marine Fisheries Service, *Snake River Salmon Recovery Plan*, and in *Wy Kan Ush Me Ea Kush Wit*, the Anadromous Fish Restoration Plan of the Nez Perce, Umatilla, Warm Springs, and Yakama Tribes as an enhanced Salmon Recovery River. This project will enhance the water quality of the Yakima River, thereby improving fish habitat.

The Yakima River system was once one of the largest contributors to the Columbia River Basin Fishery Resource, supporting substantial runs of anadromous salmonids. Sockeye Salmon, Summer Steelhead and Spring Chinook runs were all significant portions of the resource. Approximately 40 percent of Yakima Basin steelhead production occurs within the Satus Creek sub-basin.

The spawning, migration, and rearing of salmonids is a beneficial use that should be supported by the water quality of the Lower Yakima River and its tributaries. Many Yakima Salmon runs are now threatened or extinct from agricultural development and pollution. However, the Yakima River Basin also has the greatest potential for reviving Columbia River salmon stocks.

The 78 **Dairies** within South Yakima County rank second in milk production in Washington State with an average herd size of 750 milking cows. Total milk cows number approximately 66,000. 95% of the dairies are located within 15 miles of Sunnyside, Washington. These numbers do not include off-site heifer and calf operations. The feedlots in the county range in size from 4,500 to 70,000 head, with a total number of cattle on feed estimated at 150,000.

Phase I monitoring activities took place during the last half of the 1994 irrigation season. This evaluation of tributaries from the Upper and Lower Yakima agricultural areas verified that the Lower Yakima Valley required more immediate attention. Phase II monitoring was conducted over the entire 1995 irrigation season. Evaluation focused on drains and tributaries in the most heavily irrigated areas of the Lower Yakima.

The Yakima River Basin covers approximately 6150 square miles, or about 4 million acres. 45 square miles of this area is covered with water. There are 31 sub-basins located within the Yakima Basin, with the Granger Drain and Toppenish Creek corridor having the highest population. The entire Yakima River Basin lies within areas either ceded to the United States by Indian tribes and bands, or reserved for their use.

The Conservation Districts (Kittitas CD, North Yakima CD, South Yakima CD, and Benton CD) each have projects specific to areas that address water quality issues. Conservation Districts work closely with each other and other entities to protect surface waters and fish habitat from degradation.

There are approximately 1.3 million acres within the South Yakima Conservation District (SYCD) with a wide range of permanent and row crops produced, such as hops, fruit, vineyard, mint, corn, small grains, alfalfa and asparagus. Approximately 80% of all agricultural production in Yakima County is in the area serviced by South Yakima Conservation District and the Natural Resources Conservation Service (NRCS).

The South Yakima Conservation District has targeted three sub-watersheds within the district's boundaries that are known to contribute to the water quality problem on the Yakima River. The Yakima River has been listed as a 303(d) Impaired Water Body by the Washington State Department of Ecology.⁵

Granger Drain, Sulphur Creek, and Mud Lake are all return flows (natural drains) to the Yakima River. Each has high levels of sediment, nutrient, and bacteria loading well beyond the standards, into the Yakima River. This has been an on-going project for SYCD to work within these areas with cost-share dollars. Due to previous efforts, the awareness and cooperation levels of the landowners is high.

The **Granger Drain** has been a federally recognized Hydrologic Unit Area (HUA) project since 1991. An HUA is a designated area with a known non-point source water quality problem. Since being designated an HUA, the Granger Drain has been the subject of a concerted effort to improve water quality by the cooperating lead agencies (NRCS, FSA, WSU-CE).

The Granger HUA, which is composed of 13 sub-basins, contains 17,732 acres of highly productive irrigated agricultural land. The drainage enters the Yakima River mainstem near the community of Granger. The USGS determined that it was a major contributor of chemical and biological contaminants and sediments to the Yakima River (USGS NAWQUA 1986). In addition, according to the Department of Ecology in 1986, "Irrigation return flow is the single most significant source of pollutants in the Lower Yakima River."

In 1991, when the Granger Drain received its HUA designation, the South Yakima Conservation District sponsored a two-year monitoring project on the Granger Drain to determine baseline water quality levels³. This study shows that during peak irrigation of 1991, the **Granger Drain contributed as much as 163 tons of sediment per day**, 1,410 pounds of nitrogen per day; and Fecal *coliform* in concentrations as high as 160,000 organisms/1000 mL. Due to hydrologic unit cost-share monies, the **SYCD has been able to reduce the TSS load to 60 tons per day**⁶ in 1996 and expects much more can be done to further reduce this impact. The high contaminant load degrades the Yakima River below its state-established Class A standard. The district study also provided data on the levels of contaminants contributed by each of the 13 sub-basins. BMP implementation will be focused on the sub-basins with the greatest problems.

Sulphur Creek has been identified by Washington State Department of Ecology in 1986 as one of the most polluted drains on the Yakima River for many years. It contributes the largest load of total DDT compounds into the Yakima River. The largest pollutant in Sulphur Creek is sediment, which correlates to the DDT and phosphorous loading. The Sulphur Creek Characterization Project of 1994-1995¹ determined that Sulphur Creek contains 10 sub-basins, with numbers 5 and 10 being worst. These two sub-basins comprise only 20% of the total watershed area, but contribute 80% of the pollutants, injecting the Yakima River with silt, nitrates and phosphates. Overabundance of these nutrients results in eutrophication of waterways due to non-point source pollution (agriculture/septic). This is harmful for both indigenous and anadromous fish runs, also resulting in social impact due to aesthetic depletion. SYCD desires to apply BMPs to eliminate agricultural runoff. Baseline water quality data has already been acquired.

Nutrients from dairy manure in surface run-off are contributing factors to the water quality degradation of the Yakima River. BMPs are the most effective way to prevent pollution generated from dairies, confined feeding operations, feedlots, and other animal rearing facilities. Structural BMPs may include waste storage ponds, settling basins, waste transfer, vegetative buffers, visual buffers, and fencing. Management BMPs that are addressed are Nutrient Management, Pesticide Management, and Irrigation Water Management. Other management practices typically associated with livestock production that may be addressed are Pasture and Hayland Management and Roof Runoff Management. These BMPs reduce the risk of pollutants entering the Yakima River.

In 1993, the Yakama Indian Nation Water Resources Planning Program completed a turbidity and sediment study in agricultural return flows of the Toppenish Creek Basin on the Yakama Indian Reservation. The study identified the **Mud Lake Drain** as a major contributor of sediment into the Toppenish Creek Basin. The high sediment loads in the Mud Lake Drain are caused by the highly erosive nature of the Warden-Shano soil, the use of furrow irrigation and the accessibility of the drains to pastured cattle.

The Yakama Indian Nation requested assistance from the South Yakima Conservation District and the Natural Resources Conservation Service in addressing this water quality problem. Since Mud Lake

Drain accounts for 90 percent of Toppenish Creek's flow at its confluence, all three entities have identified the drain as a priority for improving water quality of the Toppenish Creek Corridor, and of the Yakima River.

The District, with input from the Yakama Indian Nation, will identify priority practices that will most significantly improve stream health. Based on the identified causes of sedimentation in the Mud Lake Drain, practices with a high priority for cost-sharing will likely be conversion from furrow irrigation to drip or sprinkler, and fencing to prevent livestock access to streams.

This grant agreement will provide cost-share assistance at the minimum level needed to encourage installation of long-term, effective conservation practices. All grant funds available under this agreement will be used for cost-sharing; none will be used for employee salaries, benefits, or equipment.

In Fiscal year 1995, SYCD was awarded \$40,000 from the Washington State Conservation Commission to assist landowners with the implementation of BMPs. Improvements were made to 300 acres, resulting in improved water quality within the drain. Converting irrigated land from surface to sprinkler or drip has proven to reduce erosion using NRCS methodologies.

b. Rationale and significance to Regional Programs

c. Relationships to other projects

This has no relationship to other BPA projects.

d. Project history (for ongoing projects)

This is a new project.

e. Proposal objectives

1. Acquire and prioritize water quality improvement projects.

- a. Advertise to landowners by mail and telephone.
- b. Create a one month window for initial project signup.
- c. Select and prioritize projects using existing criteria set by the Conservation Commission and SYCD.

2. Provide technical assistance to landowners for implementing water quality related BMPs.

- a. Coordinate with NRCS to provide technical assistance in planning and construction.
- b. Approve engineering plans, ensuring that they meet or exceed NRCS specifications.
- c. Inspect completed project according to NRCS specifications.

3. Provide cost-share assistance.

- a. Provide 50% of total cost, up to an existing specified limit.
- b. Ensure project passes NRCS inspection before funds are released.

4. Maintain project administration.

- a. District supervisors will provide overall project direction with day-to-day administration provided by the district staff.
- b. Progress made on each project will be evaluated by district supervisors at monthly board meetings.
- c. Projects must be maintained for a minimum of 10 years.

5. Evaluate the impact of the project activities on water quality.

- a. Use visual media such as videos, photos and slides to demonstrate the before and after conditions.
- b. Use already existing water quality monitoring program to measure cleanup success.
- c. Submit a final report, which includes a summary of activities and accomplishments.

f. Methods

Prioritization of projects is based upon criteria established by the SYCD, following guidelines provided by the WDOE and WCC. All implementation of BMPs will meet NRCS standards and specifications and will be certified when completed. All cost-share payments will be verified and disbursed accordingly. Yearly follow-up will be completed on management practices associated with the BMPs. Water quality monitoring will be performed by the districts and other agencies already involved in the Yakima River Basin Study. All potential projects will have an Environmental and Wildlife Checklist in accordance with existing NRCS policies and guidelines. This project will use the existing cost-share program guidelines that were set forth by the Washington Conservation Commission and the SYCD.

g. Facilities and equipment

The District provides existing office spaces and computers for utilization. All equipment necessary to complete cost-share projects will be provided by NRCS or SYCD, including vehicles, survey equipment, etc. Materials used in the implementation process will be purchased new and maintained by the landowners. Cost-share items will be maintained for a minimum period of ten years, as established by Washington Conservation Commission guidelines. No property or equipment will be purchased under this grant agreement, except for minor office supplies.

h. Budget

This proposal will provide cost-share assistance at the minimum level needed to encourage installation of long-term, effective conservation practices. Existing full-time personnel and fringe benefits are already funded by the Washington State Department of Ecology and the Washington State Conservation Commission. Maintenance of the project will be conducted by the existing personnel. Construction costs such as labor and materials are the responsibility of the landowner. No capital acquisitions will be necessary. All funds available under this agreement will be used for cost-share, with exception to \$1000.00 which is allocated for supplies. Landowners must turn in all eligible receipts in order to receive their cost-share subsidy.

Section 9. Key personnel

Name: Judith Vesper, South Yakima Conservation District (1.0 FTE)

Education

BS Environmental Science (minor in Chemistry), Washington State University
AAS in Science, Columbia Basin College, Pasco, Washington

Current Employment/Responsibilities

Soil and Water Resource Technician, South Yakima Conservation District, 1997 through Present

Provide technical assistance and guidance on cost-share projects within the SYCD. This includes direct contact with landowners in planning BMPs for cost-share monies. Assists in wetland enhancements,

lake restorations and water saving/cleaning projects. Monitors water for cleanup results in Sulphur Creek, Gray's Landing and the Giffin Lake drains. This includes inspections, meeting with NRCS staff, and determining the best system for reducing soil erosion.

Past Employment

Laboratory Soil Technician, US Agricultural Analytical, Pasco, WA 1997
Research Technologist/Analytical Chemist, Department of Chemistry, Washington State University-TriCities, Richland, WA 1995-1997
Nuclear-Biological-Chemical NonCommissioned Officer, US Army Reserve, Kennewick, WA 1990-1992

Accomplishments

Giffin Lake Restoration Project. SYCD developed a cleanup and restoration plan for Giffin Lake. Involved with assisting and documenting final construction.
Gray's Landing Poplar Project. planted 54 acres of hybrid poplar trees along the Yakima River in order to scrub irrigation wastewater and cleanup groundwater before they enter the River.

Name: Laurie Crowe, South Yakima Conservation District (1.0 FTE)

Project Duties: Provide technical assistance on water quality waste related projects in South Yakima Conservation District. Serves on the Washington State Conservation Commission Committee for Dairy Waste Management.

Current Employment/Responsibilities

South Yakima Conservation District, 1994 through Present
Dairy Waste Resource Technician-provide land owners with technical assistance to develop designs for alternative solutions to improve water quality and address erosion, drainage and irrigation problems on dairy operations. Administers all District cost-share programs.

Past Employment

Soil Conservation Technician, Natural Resource Conservation Service (NRCS), Zillah, Washington 1991-1994
Soil Conservation Technician, Washakie County Conservation District, Wyoming 1987-1991

Project Expertise

I am experienced with implementing Best Management Practices (BMPs) cost-share programs as well as providing technical assistance and education to farm and dairy operations in the Central Washington area. The district has many past water quality projects and cost-share programs that indicate voluntary implementation of BMPs is a permanent solution to solving water quality problems.

Relevant Job Completion

Granger Drain BMP Implementation Cost-Share Program, 1991 to Present
Administered cost share to farm cooperators to implement BMPs.
Dairy Waste Cost-Share Program, 1995-1997

Section 10. Information/technology transfer

Technical information obtained from this project will be included in a Final Report, which will include a summary of activities and accomplishments. The Final Report will be distributed to Bonneville Power Administration (BPA), the Northwest Power Planning Council, the Inter-Agency Council of the Yakima

River Watershed, the Watershed Information Center, the Tri-County Water Resource Agency and the Roza-Sunnyside Board of Joint Control. Copies of this Final Report will be made available for anyone who requests.

Congratulations!